planation of the way in which the peculiar palms of New Guinea could have arisen from allied Indian genera. With more plausibility, although with little more foundation on ascertained facts, may be put forward another conjecture derived from the respective relations of plants and animals to the outer world. From their organisation the former are much more dependent on climate, the latter on the vegetation which serves them for food. If an extent of sea is converted into land, its climate (independently of its geographical position) will depend on the form of its coasts and on the relief of its surface. If, now, creative forces are pronounced, the forms of vegetation will be suited to the climate. These forms correspond to the climate of the present day, as everywhere else, so also from the Malayan continent to the South-Sea Islands. If we assume that in an earlier geological period the eastern portion of the Archipelago did not yet possess its mountains, and was connected with Australia, so might the Australian climate have then extended to the Archipelago; but with the change in the climate the vegetation of the time must have disappeared. A new flora arose; but in the fauna, which was less dependent on climate, the earlier types may have longer persisted. Perhaps the present period may be regarded as one in which the Australian forms of animals are in an expiring state, because the jungle-forests do not sufficiently correspond to their demands for food. It would appear as if creative activity only wakes up at specific points of time on specific points of the earth's surface, and that during the long pauses Nature's struggles are directed only to the retaining that which exists. Vegetation, as well as the animals which it feeds, must ever be considered in relation to the geological developments. During the time which has elapsed since the mountains and the moist climate of New Guinea have been established no new creation of Mammalia has taken place. Only very few Marsupials, and scarcely any other Mammalia, have been found on this great island. But in other classes of animals forms have arisen corresponding to the present vegetation, such as the Birds of Paradise, which are unknown in Australia, but which in New Guinea hover over the forest tree-tops, whilst they can take shelter from the mid-day sun under the dense foliage. . . . The present type of organisation was already cast in New Holland in the tertiary period, whilst the endemic plants and animals of New Guinea appear to be of much later origin" (vol. ii. pp. 69, 70).

Without admitting to its fullest extent the main fact relied upon, that there is no marked line separating the vegetation of the western and the eastern portions of the Archipelago corresponding to that laid down by Wallace for animals, a premature conclusion in the present state of our knowledge,* and still less entering into speculations as to the intermittent action of creative forces which I do not quite comprehend, we must agree with Grisebach that, so far as shown by the scanty data at our command, the uniformity is much greater in the botany than in the zoology of the whole Archipelago. We may also admit with him that this comparative uniformity may be, in great measure, due to the uniformity of climate acting more upon plants than upon animals. But there are other circumstances which may probably have favoured the continued action of natural selection through countless ages in procuring this result. Dr. Hooker has very plausibly suggested a greater geological antiquity in the plant races than in those of animals, especially the higher animals, under which the former, or the ancestors from which they are descended, had become established over a wide extent of continuous land before its successive disruption, upheavals, and depressions producing the present isolation. We must next take into account that this continuity of land need not be so great in the case of plants as of animals. The dispersion of the former is passive, and takes place chiefly in a dormant state, in which minuteness and enormous multiplication afford them opportunities for crossing seas and other barriers denied to the higher animals. Plant races of accommodating (*accomodationsfähiger*) constitutions, as they successively arose and attained the full vigour of specific life, will have early spread over any continuous or but little broken area, enjoying comparatively similar physical and climatological conditions, the western and eastern forms intermingling, so as that the one should only gradually be replaced by the other, thus in early ages repeating under the tropics the phenomenon now observed in the northern temperate Europeo-Asiatic region. These vigorous or accommodating races, whether new differentiations or foreign invasions, will at the same time have gradually expelled and replaced races which in tertiary or other previous periods had occupied the land under different conditions, and which now could only maintain themselves in the struggle for life in localities affording them, in their reduced or weakened state, special protection against the effects of the altered climate and the attacks of their vigorous competitors. Such localities, suited to ancient or expiring races of few individuals, with varied but always special requirements, and generally slow of propagation, may be exemplified in the Mediterranean, the Japanese, and other regions abounding, as Grisebach terms it, in centres of vegetation; they may be faintly traced in the Nilgherries and in Ceylon; but are in general very few in Grisebach's Monsoon region, and those few are as yet but little known or wholly unvisited. Kini-Balu, in Borneo, has, however, as we learn from Dr. Hooker, supplied a place of refuge for a certain number of Australian types, and it may be conjectured that many more may have maintained themselves in those lofty mountains of New Guinea which have as yet been only seen from a distance. Continuity of vegetation probably existed in tertiary times between Australia and a vast extent of land including more or less of both of Wallace's divisions of the Archipelago. How far subsequent changes which have influenced the present distribution of animals may have affected that of the forest vegetation, can only be judged of when the floras of Borneo, Celebes, and New Guinea shall have been as well investigated and compared as have been those of Sumatra and Java.

(*To be continued*)

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* Dr. Hooker has, for instance, remarked that no Dipterocarpeæ have been found to the east of Borneo.

SCIENTIFIC SERIALS

In the *Journal of Botany* for May the editor, Dr. H. Trimen, describes a species of *Luzula* new to the Flora of Europe, *L. purpurea* Link, of which a drawing is given.—Mr. J. G. Baker concludes his revision of the Cape species of *Anthericum.*—Mr. Archer Briggs notices some peculiarities of the botany of the neighbourhood of Plymouth, principally with reference to species common elsewhere which are absent from the south-western extremity of our island.—Mr. O'Meara continues his researches on Diatomaceæ.

The number for the present month opens with a note on Dimorphism in *Eranthemum* by Mr. John Scott.—The other original articles are Notes on British Gentianaceæ by Mr. James Britten, and Supplementary Notes on the *Erysiphei* of the United States by Messrs. Cooke and Peck. Several valuable reprints, as well as many interesting short notes and queries, also appear in both these numbers.

The *Canadian Naturalist*, vol. vi. No. 3, is almost wholly devoted to Geology, commencing with a continuation of Principal Dawson's series of papers on the Post-pliocene Geology of Canada, the portion of the subject specially treated of in this number being the local details.—Prof. Sterry Hunt's "History of the names Cambrian and Silurian in Geology" has already been reprinted in our columns.—Mr. E. Billings contributes some "Remarks on the Taconic Controversy," in which he defends the views of Dr. Emmons with regard to the position of these rocks, and a note on the genus *Obolellina.*—The only new geological article is Prof. Smallwood's "Meteorological Results for Montreal for the year 1871.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, May 30.—"On the Structure and Function of the Rods of the Cochlea in Man and other Mammals." By Urban Pritchard, M.D.

The aim of this paper is to describe the true construction and use of the cochlea, so far as its task of distinguishing the various sounds is concerned. This cochlea, it must be borne in mind, consists of a spiral canal, in form and shape very similar to the inside of a snail-shell. From the axis of this spiral there proceeds horizontally a plate of bone, the *lamina spiralis*, almost dividing this canal into two. From this plate again there extend two membranes, the membrane of Russner, and the Lamina spiralis membranacea, as far as the walls of the canal, thus separating it into three minor canals.

Between the layers of the membranous spiral lamina are situated the so-called rods of Corti. These were first discovered and described by the Marquis de Corti; and although since then many observers have studied the subject, yet scarcely two investigators are agreed as to their exact form.

In a general view of the rods from above, they appear similar to two rows of pianoforte-hammers, rather than like the keys of that instrument, to which they have been likened. In a lateral view, these two rows of rods are seen sloping towards each other, like the rafters of a gabled roof. The rods consist of a shaft and two enlarged extremities, but the two rows differ considerably in form; the inner rods are attached by their lower extremities to the membrana basilaris at its junction with the lower lip of the limbus, and just external to the spot where the nerve-filaments emerge. They are directed outwards and upwards, with a slight undulation to meet the outer rods. The lower extremity is enlarged and rounded, gradually tapering to the shaft, which is cylindrical; the upper extremity is somewhat cuboid in form, but the outer surface is deeply concave, and the upper lip of the concavity is prolonged into a process.

The outer rods are attached to the membrana basilaris by a broad base, which also gradually tapers to a cylindrical shaft. Their upper extremity is less cuboid in form, and presents a convex internal surface, which articulates with the corresponding concavity in the inner rods just mentioned; from the outer and upper part there extends outwards a slender process.

One of the most important features with regard to these rods is their relative length. Most authors state that there is very little difference in the length of the two rods; in this, however, they are much mistaken; for not only do the two sets of rods differ in this respect, but the length of each varies according to its position on the cochlea. Thus, at the base, the outer rods are as nearly as possible equal in length to the inner, but proceeding upwards, both rows increase in length with great regularity, although not in the same ratio, the outer increasing with much greater rapidity, so that near the apex they are twice the length of the inner.

It was generally supposed, *a priori*, that these rods were graduated so as to distinguish the most minute variation of tone, but no one until now has been able to demonstrate this.

The rods, therefore, vary in length from about $\frac{1}{500}$ to $\frac{1}{200}$ of an inch. The number of rods in each row is not the same, there being about three of the inner to two of the outer, and, according to calculation, there are about 5,200 inner rods and 3,500 outer in the whole cochlea.

Corti and most other authors considered this system of rods to be the essential portion of the cochlea; they supposed the rods received the vibrations conducted to them, and being set in motion, so affected the nerves as to cause the brain to appreciate the various sounds. Later German writers have attributed the appreciation of the various vibrations to certain delicate cells, which are attached to the under surface of the membrana reticularis. From this circumstance alone it appears very evident that these investigators had not suspected, much less discovered, the fact that the rods are most exquisitely graduated, for otherwise they could surely never have doubted that so beautiful and suitable an apparatus could have any other ostensible purpose than that of appreciating the various sounds. I consider indeed that the cochlea represents a musical instrument, similar in nature to a harp or musical box, the strings of the one and the tooth of the other represented by the rods of Corti. The spiral bony lamina is simply a sounding-board; around the rods are placed the various nerve-cells and nerve-fibres, and from these cells the impressions are conveyed by the fibres to the brain itself.

It is possible, therefore, to trace very completely the course of sounds or vibrations from a musical instrument or any other source to the brain, through the medium of the ear. First the vibrations are caught and collected by the auricle, and transmitted through the external meatus to the drum of the ear, next across the middle to the internal ear. Here the sound is appreciated, merely as a sound, by the vestibule; the direction is discovered by means of the semicircular canals; but to distinguish the note of the sound, it must pass on to the cochlea. The vibration therefore passes through the fluid of the cochlea and strikes the lamina spiralis, which intensifies and transmits the vibration to the system of rods. There is doubtless a rod not only for each tone or semitone, but even for much more minute sub-divisions of the same; so that every sound causes its own particular rod to vibrate, and this rod vibrating, causes the nerve-cells in connection with it, to send a nerve-current to the brain.

"Examination of the Gases occluded in Meteoric Iron from Augusta Co., Virginia." By J. W. Mallet, Ph.D., M.D.

The author stated that, whether or not his analysis be considered as furnishing presumptive evidence of the Virginia iron having come to our earth from a different atmosphere to that of which the Lenarto meteorite brought us a sample, the result differs so far from that of our sole previously recorded determination of the kind as to make it a matter of much interest that a larger number of meteoric irons from various localities should be subjected to careful examination in the same direction, thus supplementing our knowledge of the fixed constituents of these curious bodies by a study of their gaseous contents.

Anthropological Institute, June 3.—Sir John Lubbock, Bart., president, in the chair. "The artificial enlargement of the Ear-lobe in the East," by J. Park Harrison; "On Tumuli at Sapolia, Ardaschevo, Russia," by Baron de Boguschefsky; "On Ogham Pillar Stones in Ireland," by Hodder M. Westropp; and "The Westerly Drifting of Nomades from the 5th to the 19th century, Part 9: the Fins and some of their allies," by H. H. Howorth. The object of the paper by Mr. Howorth was, in the first place, to discriminate between the Fins and the Lapps, whose history, physical features, customs, and other idiosyncracies are entirely different. In the second place, to show that the Esthonians belong to the Fin rather than the Lapp stock. Then to adduce the evidence for making both Fins and Esths very recent emigrants into their respective modern habitats, and to trace them to their former country beyond the Dwina, where they were known to the Norsemen as Biarmians, and to the early Russian chroniclers as Sarvalokian Ichudes. Having divested Scandinavia and Esthonia of their Fin inhabitants, and having thrust them back into an area which was of great renown in the times of the Norsemen, we can explain how the civilisation, which the Kalevala and other evidence proves, was once peculiar to the Fins, has been lost, and also explain whence the Norsemen derived a great portion of the culture which distinguished them. The main position that was new in the paper was the deriving the Esthonians from the same area as the old Fins, and making them also to be recent emigrants, and not Autochthones, as they have been so frequently described; and the clearing up of the ethnography of the old province of Biarmia, which has hitherto been much confused.

Victoria Institute, June 3.—The Rev. Prebendary Irons read a paper on Prof. Tyndall's "Fragments of Science for Unscientific People." He first dealt with physical science and its rivalries, Dr. Irons holding that there was a want of thoroughness in Prof. Tyndall's appeal to facts. He then analysed the statements made as to the action of matter on matter, and considered Dr. Tyndall to be inconsistent in stating that science could not solve the problem of the Universe, and yet adding that we ought not to see the evidences of Divine pleasure or displeasure in the phenomena of the material world. Finally, Dr. Irons urged that science and true religion could not be supposed as opposed to each other, as some men of science would have us believe.

CAMBRIDGE

Philosophical Society, May 27.—"On some properties of Bernoulli's numbers, and, in particular, on Clausen's Theorem respecting the fractional parts of those numbers," by Prof. J. C. Adams. The author gave a comparatively simple proof of Clausen's theorem. Thirty-one of Bernoulli's numbers are already known; the author has calculated twenty-two additional numbers. He also had proved that if n were a prime number other than 2 or 3, the numerator of the n^{th} Bernoulli's number was divisible by n.—"On some of the Symptoms produced by Uræmic Poisoning in Chronic Disease of the Kidney," by Dr. Latham. These symptoms were explained by:—1. The impeded passage of the blood through the minute arteries of the system, caused by excessive contraction and hypertrophy of the muscular walls of these vessels, as has been demonstrated by Dr. George Johnson. 2. The hypertrophy of the heart, developed by the resistance offered to the circulation from the contraction of these small arteries. 3. The impoverished state of the blood, which is the necessary accompaniment of the disease.

CANTERBURY

East Kent Natural History Society, May 2.—"Remarkable objects found in the Suffolk Crag, and simulating human workmanship." Some time since the president had received from the Rev. W. Bird some perforated shark's teeth; but it was only an hour or two before the meeting that a box arrived containing a further collection, including many remarkable fossils from the red clay diggings of that district, the whole being specimens of the admirable series of such objects in the possession of Mr. Edward Charlesworth, F.G.S. The teeth were described as belonging to the genera *Otodus* and *Carcharodon*, and each of these teeth had a hole near its base, about a sixth of an inch in diameter, like in form and position to the holes which the South Sea Islanders make in the teeth of sharks at the present day in order to the formation of necklace ornaments. Of course, should the perforations in the teeth from the Suffolk Crag prove to have been the work of man, it would suggest that he had existed on our planet an immense time before that at present fixed as his original appearance here. But though these holes are such as might have been, and most probably were, made by human agency; they might, on the other hand, have been the work of some boring sponge, worm, or mollusc, especially as there are in this last class many species with a curious file of lingual teeth composed of silex; and even at the present day there is a complete mystery as to the means by which some invertebrates bore into and through very refractory substances. However, the whole evidence as to these holes in the shark's teeth preponderates in favour of the view that they were made by man. But even fully admitting that they were so made, it would not necessarily follow that the perforations in the teeth were made by man coeval with the crag in which they were found.

PHILADELPHIA

American Philosophical Society, February 16.—A memorial to Congress was adopted, praying for an appropriation in aid of astronomical expeditions, especially for one to the Antarctic region, for the purpose of observing properly the approaching transit of Venus.—Prof. P. E. Chase read a paper "On Correlations of Cosmical and Molecular Force." From the hypothesis that the entire energies of opposing attractive and repulsive forces may be considered as concentrated in one of the foci of the resulting oscillations, he deduced various interesting approximations to the ratio between the respective amounts of heat required for equivalent work under constant volume and under constant pressure, to the change of specific gravity in the conversion of $H_2 + O$ into H_2O, to the period of terrestrial rotation, and to the solar and lunar masses. Some idea of his method may be formed from the following approximation to the sun's mass and distance. According to the mean result of experiments by Dulong, Hess, Andrews, and Favre and Silbermann, one pound of H burned with eight pounds of O liberates enough heat to lift the nine pounds H_2O vapour, *in vacuo*, $\frac{34533 + 77^2}{9}$ feet. Such a lift would establish an oscillation, which would be perpetually sustained, by terrestrial attraction, and elastic rebound, unless otherwise counteracted. If chemicals vary as gravitating energies, the mean height of the oscillating vapour : mean height of oscillating earth :: earth mass : sun's mass. Therefore, if m = mass of sun ÷ by mass of earth, d = distance of sun ÷ earth's radius, r = earth's equatorial radius in feet, h = mean height of oscillating vapour, T_1 = solar year in seconds, T_0 = time of satellite revolution at the surface of the earth.

$$m = \frac{dr}{h}$$

$$T_0 = T_1\left(\frac{d^3}{m}\right)^{\frac{1}{2}} = T\left(\frac{hd^2}{r}\right)^{\frac{1}{2}}$$

Hence we readily obtain the values

$$d = 233{,}772 = 92{,}639{,}500 \text{ miles}$$
$$m = 330{,}260.$$

—Benjamin Smith Lyman read a paper "On the Topography of the Punjaub Oil Region." It aimed at a somewhat detailed account of the topography of the Punjaub Oil Region: its situation, general features, special features, &c. The different places are mentioned where each kind of topography is to be seen, and its causes and simple laws pointed out, chiefly in order to show the great usefulness of careful topographical studies to geology. A short sketch of the geology of the region, apart from structure, is also added; as to the oil, from the writer's own "General Report on the Punjaub Oil Lands, Lahore, 1870," and as to other points from older works. The general section of the rocks of the region is as follows, below the new and old alluviums:—

Miocene (Sivalik), perhaps	3,000 feet.
Eocene (Nummulitic), with oil ...	1,950 ,,
Mesozoic, perhaps	700 ,,
Carboniferous, without oil, about ..	1,800 ,,
Devonian, with salt and plaster ...	2,850 ,,
	10,300 ,,

The oil or asphalt (dried oil), or rock tar (melted asphalt), is found at a dozen different places, and, in very small traces, at half a dozen more, all within a space of a hundred miles square. They are all in Nummulitic rocks, except one in Carboniferous. The deposits all seem of very small horizontal extent—sometimes only a few feet, seldom a hundred yards, once only as much as half a mile. In this case, too, the oil-bearing bed is a hundred feet thick, in one other forty, in two others twenty, and in the rest much less. The oil comes in some places from lime rock, in others from sand rock, or shales. The yield of one well was at first fifty gallons a day, but grew quickly less, like the ordinates of a parabola, and seems likely to reach 3,000 gallons in all within a year and a half. At a rough guess, a hundred such wells might be bored in the region, with a whole yield, then, of hardly 7,000 barrels. The natural springs (five) yield from a gill to three quarts a day. The oil is dark green and very heavy (25° B. or less). There is nothing whatever in the Punjaub oil deposits to bear out a belief in the distillation of oil from one bed to another, or in its emanation from below, or in its gradual passage from the lower parts of a bed to higher parts of the same bed, or in its origin from any source but the decomposition of organic matter in the rocks. Neither is there anything here (or anywhere else) to justify wild hopes of finding large quantities of oil by boring into cavities below the oil-bearing bed. The occurrence of salt, gypsum, and alum shales in large quantities is noticed, as well as that of sulphur, saltpetre, brown coal, and good in small quantities, and that of traces of copper, iron, and lead.—Prof. E. D. Cope read a paper on *Bathmodon*, a genus of extinct Ungulates. It was presented as Perissodactyl in general characters, but with peculiarities of dentition of a combined ruminant and suelline character. There was on the outer side of the molars but one crescent, and before this a tubercle. The inner portion of the crown a ledge. Besides the species *Bathmodon radians*, a second form, *Loxolophodon semicinctus* was referred to the group. The former animal was large as the rhinoceros, the second equal to the tapir.—A memoir on the "Geology of Western Virginia" was presented by Mr. J. J. Stevenson.

March 1.—Mr. B. Smith Lyman presented for publication a topographical map of West Virginia.—Prof. Cope read a paper on two new species of Ornithosaurians from the Kansas Cretaceous. They were described as *Ornithochirus umbrosus* and *O. harpyia*. The former was regarded as one of the most gigantic of the pterodactyles, extending probably 25ft. from tip to tip of the wings. The other was two-thirds the size.—Prof. Cope read a paper on *Protostega*, a genus of extinct Testudinata. A detailed account of the Osteology of *P. gigas* from the Cretaceous was given, by which it appeared that the genus had separate ribs as in *Sphargis*, and that the only carapace was formed by large radiating plates of bone in the skin. Two other species were described, *P. tuberosus* and *P. neptunius*—the last, the largest known marine turtle.—Mr. Eli K. Price read a paper on "Some other Phases of Modern Philosophy," in which he combatted the views of Huxley and others as to the physical basis of life.

PARIS

Academy of Sciences, May 20.—M. Becquerel read a ninth memoir on the means of increasing the effects of electro-capillary actions in inorganic bodies, and on the effects of the same kind produced in living organised bodies.—M. Sainte-Claire Deville presented a note by M. G. Guéroult on the relations existing between the numbers of vibrations of musical sounds and their intervals, and on a scale-rule for acoustic calculations invented by him.—M. Jamin communicated a note by M. J. M. Gaugain on the electro-motive forces developed by the contact of metals with inactive liquids, in continuation of a former paper by the same author; and M. T. Du Moncel presented a note on the induced currents resulting from the action of magnets upon induction coils normally to their axes.—A memoir was read by M. Le Verrier on the theories of the four superior planets, Jupiter, Saturn, Uranus, and Neptune, containing an investigation of the perturbations which each of these four planets undergo by the action of the other three.—A letter was read from Father Secchi, containing a summary of observations of solar protuberances from Jan. 1 to April 29, 1872, containing a tabular exposition of the results of observations, with a discussion of their bearing upon the general question.—M. Delaunay presented an extract of a letter from M. Förster on the magnetic disturbances observed during the occurrence of auroras.—M. Coste communicated a note by M. Z. Gerbe on the segmentation of the cicatricula in the ovum of plagiostomous fishes, in which the author describes the evolution of the Rays in confirmation of the opinion put forward by M. Coste that in the plagiostomous fishes, as in reptiles and birds, it is the cicatricula alone that undergoes segmentation. M. Coste also communicated a notes by M. G. Pouchet, on blue colorations in fishes, in which the author ascribes the blue colours presented by some parts of certain fishes to the presence beneath the skin of oval or roundish bodies which he calls "iridising bodies."—A note by M. E. Prillieux, on the influence of congelation upon the weight of vegetable tissues, was presented by M. Duchartre.—M. A. Rivière read a memoir on the oolitic or Jurassic formation of La Vendée, accompanied by a geological map of that locality.—M. H. Douvillé presented a note on the coal-bearing strata of the banks of the Rhine, with especial reference to the distribution of these deposits into an upper and lower formation, the deposition of which was separated by a great dislocation.—M. S. Meunier presented a mineralogical investigation of the grey serpentines, from which it results that these rocks consist essentially of a mixture of magnetite, pyroxene, peridot, and magnesite.—M. A. Leymerie communicated a note in reply to a recent communication by M. Garrigou on the unity of composition of the Pyrenees.

May 27.—M. Serret presented a memoir by M. V. J. Berton on the determination of the limits between which a primary number of a given form occurs.—M. Chasles presented a note by Mr. A. Cayley on a flattened quartic surface; M. Ribaucour a note on the developates of surfaces.—A note by M. C. Jordan on the infinitely small oscillations of material systems was presented by M. Yvon Villarceau.—M. Faye presented a reply by M. Respighi to a recent note by Father Secchi on some peculiarities of the constitution of the sun.—M. Le Verrier communicated a note by Father Denza on meteors observed in Piedmont on the evening of April 24, including the account of a second meteor in addition to that seen at Agde by M. Perris. The author also notices the occurrence of a fine aurora on May 9.—M. Becquerel read a note on the cultivation of the vine in clay soils, in which he indicated the conditions of temperature prevailing in clay, silicious, and calcareous soils, and showed that in the former the vine could only be successfully cultivated by training it to a considerable height.—M. W. de Fonvielle presented a note embodying some fresh examples of the danger arising from the vicinity of metallic masses during storms, and M. E. Nasse forwarded a note on an instance of globular lightning observed at Brives on May 17.—M. Delaunay presented a note by M. Frou on the laws of cyclones and tempests, and on their geometrical representations.—A considerable number of papers on chemical subjects was presented, namely, a memoir on the iron contained in the blood and in food by M. Boussingault, containing a great number of interesting details upon this important subject; a note by M. A. Wurtz on an aldehyde-alcohol, $C^4 H^8 O^2$, which he proposes to name *aldol*; a note by M. G. Bouchardat on a new organic base, dulcitamine, $C^{12} H^{15} NO^{10}$, derived from dulcite, presented by M. A. Wurtz; a note by M. T. Schlœsing on the influence of vegetable mould on the mobility of soils, communicated by M. Peligot; a memoir by Mr. F. Crace-Calvert on bleaching powder, presented by M. Balard; a note by M. B. Rénault on a new process for obtaining reproductions of drawings, also presented by M. Balard; and a note by M. Sidot on the production of a crystallised phosphuret of iron, presented with some remarks by M. Daubrée.—M. Cl. Bernard communicated a paper by M. Z. Pupier, containing an experimental demonstration of the action of spirituous beverages upon the liver; the author's experiments were made upon fowls and rabbits.—A note by MM. N. and E. Joly on the supposed Crustacean, on which Latreille founded the genus *Prosopistoma*, was presented by M. Milne-Edwards; the authors show that this animal is a true insect probably allied to the Ephemerina.—M. Blanchard communicated a note by M. S. Jourdain on the anurous Batrachia with large and small tadpoles, in which the author insists upon an analogy between the development of the former and that of insects.—M. de Vibraye communicated a note on the spontaneous appearance in France of exotic forage-plants consequent on the presence of the belligerent armies in 1870-71.—M. P. Gervais presented a note on the mammalia of which the bones are associated with the deposits of phosphate of lime in the departments of Tarn-et-Garonne and the Lot. These bones appear to belong to various epochs, the oldest belonging to the fauna of the Paris gypsum, others to the Miocene or more recent times. The genera represented are *Anoplotherium*, *Dichobune*, *Entelodon*, *Cainotherium*, *Amphitragulus*, *Palæotherium*, *Rhinoceros*, *Hyænodon*, *Canis?* (*palæolycos*, sp. n.) and *Viverra?* (*ambigua*, sp. n.) At Caylux there are Rodents allied to *Theridomys*, with remains of *Chalicotherium*, *Anthracotherium*, and *Antilope? boodon*.—M. Daubrée made some remarks on the deposits from which the fossils noticed by M. Gervais are derived.—M. de Verneuil read a note on the recent eruption of Vesuvius, which also formed the subject of a communication from M. Guiscardi.

BOOKS RECEIVED

English.—Experimental Chemistry, founded on the work of Dr. J. A. Stöckhardt: C. W. Heaton (Bell and Daldy).—Knapsack Manual for Sportsmen in the Field: E. Ward (Bradbury and Evans).

DIARY

THURSDAY, June 6.

Royal Institution, at 3.—On Heat and Light: Prof. Tyndall, F.R.S.

Society of Antiquaries, at 8.30.—Excavations at Rome, 1871–2: J. H. Parker, C.B., F.S.A.

Linnean Society, at 8.—On some recent forms of *Lagenæ* from Deep-Sea Dredgings in the Japanese Seas: F. W. O. Rymer Jones.—On the Cutaneous Exudation of the Water Newt (*Triton cristatus*): Miss Eleanor A. Ormerod.

Chemical Society, at 8.

FRIDAY, June 7.

Geologists' Association, at 8.—On the Classification of the Cambrian and Silurian Rocks: H. Hicks.—On the Silurian Rocks of the English Lake District: Prof. A. Nicholson, M.D.

SATURDAY, June 8.

Government School of Mines, at 8.—On Geology: Dr. Cobbold, F.R.S.

MONDAY, June 10.

Royal Geographical Society, at 8.30.

TUESDAY, June 11.

Photographic Society, at 8.—On some early Glass Pictures produced by the late Sir John Herschel, Bart.: Prof. A. S. Herschel, B A., F.R.A.S.—On the Photographic Manipulations undertaken at the last Eclipse, practically described: Capt. Waterhouse, Assistant Surveyor-General of India.—Spectroscopic Observations in connection with the Carbon Process: Lieut. Abney, R.E.—On the Use of Uranium in Dry Plate Photography: Colonel Stuart Wortley.

THURSDAY, June 13.

Royal Society, at 8.30.

Society of Antiquaries, at 8.30.

Mathematical Society, at 8.—On the Surfaces divisible into Squares by Curves of Curvature: Prof. Cayley.—On Prof. Cremona's Transformation between Two Planes and Tables relating thereto: Mr. S. Roberts.—On a Manifold Correspondence of Two Planes: Dr. Hirst.

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